

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, applicant's submission filed on February 3, 2011 has been entered.
2. This is in response to the applicant's reply filed December 17, 2010 and February 3, 2011. In the applicant's reply; claims 51-56 were cancelled, and claims 18 and 26-44 were previously cancelled. Claims 1-17, 19-25, and 45-50 are pending in this application.

Response to Arguments

3. Applicants' amendments filed on December 17, 2010 and February 3, 2011 has been fully considered. The amendments overcome the following rejections set forth in the office action mailed on August 18, 2010.
 - a. Applicant's cancellation of claims 51-56 renders moot the rejection of Claims 51 and 53 - 56 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, and the rejection is hereby withdrawn.
 - b. Applicant's cancellation of claims 51-56 renders moot the rejection of Claim 51, 53 and 55 under 35 U.S.C. 112, second paragraph, as being indefinite, and the rejection is hereby withdrawn.

- c. Applicant's cancellation of claims 51-56 renders moot the rejection of Claim 51 under 35 U.S.C. 102(e) as being anticipated by Armato III et al., and the rejection is hereby withdrawn.
- d. Applicant's cancellation of claims 51-56 renders moot the rejection of Claim 52 under 35 U.S.C. 103(a) as being unpatentable over Tobin in view of Tannenbaum et al. in view of Bitter et al., and the rejection is hereby withdrawn.
- e. Applicant's arguments with respect to the objection to the specification for the description of Figure 16B i in the "Brief Description of the Figures" is persuasive, and the objection is withdrawn.
- f. Applicant's amendments to the specification clarify the priority claims for the instant application in accordance with the granted petition.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Paragraph [0001] of the specification has been amended as follows:

The present application is a continuation-in-part of and claims the benefit of PCT Patent Application, International Application No. PCT/US2005/008311, having an International filing date of 11 March 2005 and designating the United States, which in turn claims benefit of U.S. Provisional Patent Application, having Serial

No. 60/552,332, filed 11 March 2004, the disclosures of which are hereby incorporated by reference in their entirety.

REASONS FOR ALLOWANCE

5. Claims 18, 26-44, and 51-56 are canceled by the applicants
6. Claims 1-17, 19-25, and 45-50, now renumbered as 1-17, 18-24, 25-30, respectively, are allowed.
7. The following is an examiner's statement of reasons for allowance:
 - a. Claims 1-17, and 19-25 are not rejected because the prior art fails to teach the method of Claim 1, which specifically comprises the following features in combination with other recited limitations:
 - ;"An apparatus comprising":
 - ; "(a) ***a memory configured to receive a medical diagnostic image representing a neuro-axis of a patient***";
 - ; (b) ***"a program stored in the memory and operatively configured to detect and label a plurality of spinal structures in said medical diagnostic image using an iterative process"***;
 - ; (c) "a processor in communication with the memory to perform the program"

-; "wherein ***the program is further operatively configured to automatically generate a prescription using said labeling of the plurality of spinal structures***".

As these limitations are recited in independent claim 1, and claims 2-17, and 19-25 are dependent therefrom, they carry forth these limitations, and are also allowable subject matter.

b. Claims 45-50 are not rejected because the prior art fails to teach the method of Claim 45, which specifically comprises the following features in combination with other recited limitations:

-; An apparatus comprising: (a) a memory configured to receive a plurality of medical diagnostic images of a patient's neuro-axis;

-; (b) a program stored in the memory and operatively configured to:

-; ***(i) generate a composite midline sagittal image volume of the neuro-axis by combining two or more medical diagnostic images from the plurality of medical diagnostic images, wherein the generated composite midline sagittal image volume includes at least a portion of all interspaces and vertebrae between the patient's axis (C-2 vertebra) and sacrum; and,***

-; ***(ii) identify a plurality of spinal structures in the composite midline sagittal image volume by iteratively searching for a predefined search number of spinal structures between the patient's axis (C-2***

vertebra) and sacrum, wherein the spinal structures are taken from the set of spinal structures consisting of:

(1) intervertebral discs; and

(2) vertebrae;

--; and wherein, if the spinal structures are vertebrae, the predefined search number is 22, otherwise, if the spinal structures are intervertebral discs, the predefined search number is 23; and

--; (iii) determine if a set of predefined criteria are met and, if so, allowing the predefined search number to vary by one;

--; (c) a processor in communication with the memory to perform the program.

As these limitations are recited in independent claim 45, and claims 46-50 are dependent on claim 45, they carry forth these limitations, and are also allowable subject matter.

Some closely related prior art references are listed previously: Hipp et al. (US PGPub US 2003/0086596 A1, hereby referred to as "Hipp"), in view of Long et al. ("Landmarking and feature localization in spine x-rays", *J. Electron. Imaging*, Volume 10, Issue 4, pages 939-956, October 2001, hereby referred to as "Long"), and the references cited in form PTO-1449. None of the references teaches the *method* recited in claim 1, nor the *apparatus* recited in claim 45. Especially, Hipp is the most relevant reference. Hipp teaches a method and system to detect a plurality of spinal structures in

medical diagnostic images, but does not teach labeling the spinal structures and automatically generating a prescription using said labeling of the plurality of spinal structures. Likewise, Long teaches a method for landmarking and feature identification in spinal x-rays using labeling, and was used in combination with Hipp in previous office actions. However, neither reference teach automatically generating a prescription using said labeling of the plurality of spinal structures, as claimed in claim 1, in combination with other recited limitations. Neither Hipp nor Long, nor any of the prior art references teach the following limitations as claimed by claim 45, in combination with other recited limitations:

- ; "(i) generate a composite midline sagittal image volume of the neuro-axis by combining two or more medical diagnostic images from the plurality of medical diagnostic images, wherein the generated composite midline sagittal image volume includes at least a portion of all interspaces and vertebrae between the patient's axis (C-2 vertebra) and sacrum; and,
- ; (ii) identify a plurality of spinal structures in the composite midline sagittal image volume by iteratively searching for a predefined search number of spinal structures between the patient's axis (C-2 vertebra) and sacrum, wherein the spinal structures are taken from the set of spinal structures consisting of:
 - (1) intervertebral discs; and
 - (2) vertebrae;

-; and wherein, if the spinal structures are vertebrae, the predefined search number is 22, otherwise, if the spinal structures are intervertebral discs, the predefined search number is 23; and

-(iii) determine if a set of predefined criteria are met and, if so, allowing the predefined search number to vary by one;

-(c) a processor in communication with the memory to perform the program.

For these reasons, the prior art thereby does not teach the recited limitations alone or in combination.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAHMINA ANSARI whose telephone number is (571)270-3379. The examiner can normally be reached on Monday through Thursday, 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BHAVESH MEHTA can be reached on 571-272-7453. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W Johns/
Primary Examiner, Art Unit 2624

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